

CHARLOTTE MASON COLLEGE
AMBLESIDE

none 499

HOW TO KEEP A NATURE NOTE-BOOK

BY

A. C. DRURY (C.M.T.)

LONDON

PARENTS' NATIONAL EDUCATIONAL UNION

MURRAY HOUSE, VANDON STREET, S.W.1.

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"As the days and then the years go on, each child, according to his taste, amasses facts on which to build unconscious comparisons: of one year with another, one climate with another. For to many the Nature Note-books become life-long companions. It is so interesting to look back and be certain where the first uncommon flower, such as the blue pimpernel, was seen and whether it can be expected in what seems a similar situation. These extracts then are from genuine observations, written at the time."

Extract from NATURE NOTE-BOOK SECTION,
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'There are few joys in life greater and more constant than our joy in Beauty....Beauty is everywhere—in white clouds against the blue, in the grey bole of the beech, the play of a kitten, the lovely flight and beautiful colouring of birds, in the hills and valleys and the streams, in the wind-flower and the blossom of the broom. What we call Nature is all Beauty and delight, and the person who watches Nature closely and knows her well, like the poet Wordsworth, for example, has his Beauty Sense always active, always bringing him joy.' These are the words of our founder, Charlotte Mason, in *Ourselves*, p. 42, Book I. And further in Book II, p.98, she writes:

'In return for our discriminating and loving observation, Nature gives us the joy of a beautiful and delightful intimacy, a thrill of pleasure in the greeting of every old friend in field or hedgerow or starry sky, of delightful excitement in making a new acquaintance.' The way to pursue the acquaintance by patient observation is explained in this chapter and also in Charlotte Mason's other books. 'Children should be encouraged to watch patiently and quietly until they learn something of the habits and histories' (*Home Education*, p. 57) of living things.

'Our first thought with regard to Nature knowledge is that the child should have a living personal acquaintance with the things he sees....' (*Parents and Children*, p. 231). In Nature Study 'we attach great importance to *recognition*, believing that the power to recognise and name a plant or stone or constellation involves classification and includes a good deal of knowledge. To know a plant by its gesture and habitat, its time and its way of flowering and fruiting; a bird by its flight and song and its times of coming and going; to know when, year after year, you may come upon the redstart and the pied flycatcher, means a good deal of interested observation, and of, at any rate, the material for science' (*Home and School Education*, p. 236). And the method of study follows in the same passage; 'The children

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keep a dated record of what they see, in their Nature Note-books, which are...a source of pride and joy, and are freely illustrated by drawings (brushwork) of twig, flower, insect, etc.'

For the brushwork drawings the first essentials are some good drawing paper, clean water-colour paints and a medium-sized sable brush with a good point. Special books interleaved with lined paper for notes can be obtained from our suppliers, but almost any drawing book can be used, provided the paper will not buckle. The water must be clean and renewed often, especially for yellows after using blues. Enough paint must be mixed on the palette of the tint required. The tone can be tested on a loose piece of paper to see if it matches. Very often it is too watery, but the aim should be to put on the right depth of colour in the right shape, once for all. Easy things, like twigs with swelling buds or with small leaves, brightly coloured flowers, seedlings, winged fruits, should be chosen to begin with. The twig should be painted the right width with one brush stroke and the darker side added just before it dries. Or a hard line can be avoided by laying a brush full of clean water along it. A good half of a leaf could be done with one brush stroke and the rest before the paint dries. And if the leaf is serrated, the teeth can be drawn out of the plain margin while it is wet, with a smaller brush. A small brush is also useful for darker touches, *e.g.* where two petals overlap. But, in general, a good-sized brush encourages brush-work rather than drawing in colour as if the brush were a pencil. The brush should not be so full that the paint will drop off the tip, but it should be constantly refilled from the palette, because the paint left on the paper is no longer in the brush! Superfluous paint on the paper can be removed with blotting paper or a clean brush, or it can be led to the darkest part of the leaf, fruit, toadstool cap, etc., to dry there.

It is important to look on the light side of the plant that is being copied, so the latter should not be lying on the left of a right-handed person, because the light should be coming from his left, and he would see the dark side of his copy. This should be propped up in front of him as erect as possible against a background of the same colour as his drawing paper. The light should never be in the artist's eyes, but it might be coming from behind him. White flowers are difficult for beginners unless one is showing up against a leaf. But if the light side of a flower has

only the white paper background, it is quite satisfactory to give it a fine, dark outline. Time is too precious to be spent in making shadows on the background. It would be better to use it for painting another flower.

Time must be taken to study the subject, and there is a great deal to be noticed about a twig while painting it: the width of the stem, the stiffness or pliancy of the twig (*e.g.* ash compared with lime), the distance between buds, the angle made by bud or leaf with the stem, the shape and colour of the buds as well as of the twig, the old scars of bud scales showing how much of the twig grew in a single year. This opportunity for observation is the primary reason for painting and does not detract from the pleasure of putting brush to paper. The more time given to consideration before painting, the better will be the copy produced. It will be itself a nature note complete with the name and date. Dated notes have a permanent value which becomes greater with every year added, provided the notes are written at the time, not some time later when the impression has faded. They may confirm a previous record or make a startling contrast with some other year or some other locality. The place where the holidays are spent may have a different climate and flora from the school surroundings, if one is on the South Coast, for instance, and the other in some northern highlands, or if one possesses chalk or limestone and the other has none. Dates, in fact, are so important that we keep lists of them by themselves: (1) a flower list which gives the first date on which the flower opens and is ruled in columns to last for twelve months, shows how long each goes on flowering; for example, how short a season the hazel, daffodil, coltsfoot and most grasses have, how regularly the groundsel, daisy, dandelion, chickweed, gorse, go down on the list every month, how the largest number of flowers is to be seen in June, and so on. This relieves the notes of a lot of little details which need tabulating to give them their full value. (2) A bird list showing which are resident, and the dates of arrival and departure of migrants, such as the warblers, the martins and the swallow. The bird list can have columns for entering the dates when the song was first heard, nest building began, eggs were laid and hatched, nestlings took flight. (3) Some people like to make lists of insects or, (4) of mosses and liverworts with the dates when their capsules burst to shed their spores, and this

list might include the horsetails and other spore-bearing plants.

The notes written will be chiefly about the behaviour of birds, animals, insects, or creatures of the sea shore. Here is an example of the latter:

'April 6 and 7. I found a sand mason's tube about two inches long and perfect. It was sealed with a membrane in two pieces that looked like a picture of the vocal cords! Part of the circle was filled by parallel gold threads. While I had the tube in my hand, these rose into a golden comb and the worm began to come up. It was orange with some blood-red streaks on the two sides, and as the worm emerged further its rings looked like corrugations, a lovely yellow colour. Presently I saw that these had golden bristles on either side, one pair to a ring, and each bristle emerged from a fine golden sheath or papilla. The lower end of the tube was open and dripped water. On the second day, the day after full moon, I picked up an empty but full-length sand mason's tube and it had a floor about one inch down with only a tiny hole through it as if the earlier part of smaller diameter were now deserted! Only one tube had a worm in it, which moved after being dipped in a pool! Again the golden bristles seemed the most marvellous and beautiful threads I had ever seen. They arched over a kind of pointed head or lip which was continually moving and stretching.' The sand mason's tube had been painted in April, three years previously, at Dymchurch, Kent.

When we are in the habit of looking about us, we get the most delightful surprises out of doors. Even if we can only go a short distance, things we know quite well can fill us with wonder and delight, such as the stigmas of the sorrel or the stinging nettle, chased seeds in the stitchwort capsules, crescent-shaped, leaf-like stipules on the young hawthorn shoots. We may see a squirrel with his cheeks full of nuts sit up on a pine tree to nibble one, or we may find his front tooth marks on the hood of a toadstool. A stinkhorn may be tracked down by its smell, or the garlic bulb distinguished from the wild hyacinth also by smell. We may find some insects emerging from the chrysalis, a dragonfly, a lace-winged fly, a ladybird, or the empty skins of stoneflies, and we may see other insects besides the butterfly feeding on a flower. We must take care to write down nothing but what we have heard or seen, smelt, tasted or touched, and our store

of facts will grow and some day we shall be able to draw conclusions.

Looking again at the willow-palm, on March 14th, I discovered this about its visitors. 'Pistillate willow was out in Brathay quarries (Lancs.) after four days of sunshine and two nights of four degrees of frost. There was a staminate willow on the edge of the plantation full of the sound of bees. Some of the catkins had been out a long while and others were fresh. Three times a tortoiseshell butterfly came too, or maybe three tortoiseshell butterflies, and the large (wood) ants with red thorax were running up the twigs and on to the catkins. There were small flies like house flies and two of the hairy flesh flies, *Sarcophaga carnaria*, with blue and black striped thorax. The bees' "pollen baskets" were full, but I could not see them putting the pollen into them.

'On the road side, a larch tree stretched over the field I was in, and one larch rose was brilliantly crimson, others were opening. I heard an owl while I was up there and on the way home I saw it flying over the brushwood; such long, narrow, blunt wings it had!

'Patches of *Polytrichum piliferum* looked copper-coloured on the flats of waste slate.' (One was painted).

'Pines that had been felled in the wood exuded resin in rings, the annual rings, on the cut surfaces of trunk, branch, or beginning of a root. The resin ducts made circles of white dots in every section... Where the flow of resin had been copious, it covered the cut surface with a white seal.

'Ice was on the quarry pools in patches, while in the road outside, Douglas fir cones were gaping widely enough to shed their seeds.' A couple of these seeds were painted and led to the painting of other seeds of conifers.

The standard to aim at is always to illustrate the notes and to avoid using words to describe what could better be shown with the brush. When one flower reminds us of another, it is good work to paint them both—the Sheep's Bit (*Jasione*) alongside the Devil's Bit Scabious with its free anthers, for example, or the tormentil beside the creeping cinquefoil, where the difference between the sessile and stalked leaves is like one of the distinctions between Germander and mountain speedwells. The winged fruits of maple and sycamore are sure to be noticed when seeds are

being dispersed, or they may be painted amongst the trees studies. For having begun with a twig, it is more interesting to leave the rest of the page and one or two more blank to allow for completing the year's history of the tree. Let us suppose it is an alder, for the clean orange shoot of last year with its lilac buds whitened with bloom and already stalked, is a most attractive twig to paint. Then the catkins are easy to paint before they are too big and loose. These are staminate catkins, all purple and gold. The pistillate ones with bright crimson stigmas among purple bracts are probably on the same twig. It is quite possible to paint a big one with a small brush, or it could be slightly magnified with a hand lens. Later on, the pistillate catkins grow into fat green fruits not unlike cones, and still, later, they drop their seeds, and the dry, brown, cone-like catkins remain on the tree throughout the winter. These stages should appear on the alder tree pages and also an unfolding bud with its conspicuous stipules, and at least one full grown leaf. The attempt to paint the twig, leaf, flower and fruit of every well known tree makes us wonder whether we know them all. We shall easily find the seedlings, too, of beech, ash, oak and sycamore; and cherry, hawthorn and holly are not uncommonly found. It would be a wonderful thing to find a seedling pine or larch with eight cotyledons or more. We shall discover some unexpected facts about the length of time certain trees, such as the common elm, the larch, the horse chestnut, have lived in Britain, if we try to confine our brush work studies to native trees and plants. People who have begun to learn Latin would be well advised to incorporate the scientific names of flowers in their flower lists, for these names show relationship for classification as English names cannot. Notice, for example, in the genus *Stellaria*, that common chickweed is *S. media*, greater stitchwort is *S. Holostea* and bog starwort is *S. uliginosa*, but the delightful English names give no idea that the three flowers are three species of one genus. Again the lesser spearwort is *Ranunculus Flammula*, meadow crowfoot or buttercup is *R. acris* and the lesser celandine is *R. Ficaria*—names which record a relationship which is obvious to the eye. Scientific names of butterflies and moths often show on what plants their caterpillars feed, and, knowing the plant names, we may be able to name the caterpillars on them. The well-known yellow-barred caterpillar of the Cinnabar moth,

Hipocrita jacobææ feeds on ragwort, *Senecio Jacobææ*. The mullein moth, *Cucullia verbasci*, feeds on *Verbascum Thapsus*. The antler moth caterpillar which infested some Westmorland fells in 1936 destroyed the sheep's fescue, one of the *Gramineæ*, and it is named *Charæus graminis*. The Orange Tip butterfly lays its eggs upon *Cardamine*, lady's smock, and other Crucifers, and it is named *Eucheo cardamines*; and the small tortoiseshell, *Vanessa urticae*, both lays its eggs and hangs its golden chrysalides on *Urtica dioica*, the common stinging nettle. Scientific names as well as botanical terms are the shortest way of stating facts and help us to condense our notes. A botanical diagram, too, is a short way of stating facts but rarely suitable for a Nature Note-book. There the paintings should be studies from nature, so that we get 'to know a plant by its gestures and . . . its way of flowering.' A botany lesson on the dispersion of seeds sets us looking for more examples so that we may paint by degrees all that we can find. For of course we do not bring home more than we expect to paint before they wither: that would be only to make them scarce. A lesson on the Umbelliferae calls attention to the beautiful sheathing leaf-stalks of *Angelica*, hogweed, fennel, goutweed. I had been painting some of these from year to year when I learnt to recognise Burnet Saxifrage by its lovely rose-coloured leaf sheaths in the autumn. Here are some examples of notes made in Hants and Dorset.

June 5th. We saw the first dragonflies to-day sown in the marshy valley bottom round about noon: blue and scarlet needle dragonflies, and the flat bodied blue *Libellula*. It was fascinating to watch the latter hawking up and down a piece of still water with a forest of upstanding horsetail branches. It had a favourite reed to rest on. Once it met and twisted in the air with what looked like a pale yellow mate.

June 8th. Three mulleins in the garden are almost wholly eaten by those handsome caterpillars (of the mullein moth) I saw on figwort at Trevone (in July, 1937). There are ten on one plant (Painting of the large caterpillar.)

July 5th. On the road to Salisbury we lunched in a circular depression in the chalk which was beautified with wild thyme of a brilliant colour, squinancy wort, scarlet pimpernel, salad burnet not quite over and common thistles, on a head of which a

tortoiseshell butterfly was feeding. Of all the ragworts only bare stalks were left, and these were beset with cinnabar moth caterpillars. They were also walking rapidly over the ground in search of food and over our clothes. Bittersweet grew against the slope of our shallow pit and white bryony overflowed the edges from above. Self-heal, though short, was a fine colour all over the ground.

July 5th. On Scotland Heath the large pods of petty whin caught my eye, and there were some flowering shoots left. (Accompanying illustrations of both and of a half pod open.) Well may it be called 'needle whin'! The thorns are very sharp each in the axil of a leaf and itself bearing leaves. The dried up ditches are clothed with both species of sundew. All the flowers were in bud on both. I have never seen so much *Drosera longifolia* before. The stalks of the inflorescences were very long for the size of the leaf rosette.

August 13th. Out on the heath there were those very slender rushes usually in water, *Rynchospora alba* (painted), and great fruiting spires of marsh orchis. The colours of the ciliated heath and bog asphodel fruits (painting) were wonderful, backed by green bracken and the blue of the Purbeck downs. The round-leaved sundew had an open flower and fruits beneath the same (painted). A wheatear crossed our path. We went afterwards to another road and saw six marsh gentians, none of them open. Here the blue fleabane grew beside the road. The dryness is not favourable to the gentians. A week ago I could not reach any of the *Rynchospora* to look at it. To-day I could walk all over the ground where it grew and over *Sphagnum* moss and bog asphodel. The three carpels of the marsh orchis are joined by their margins and have three placental ridges within. (One fruit painted and section.) The three ridges outside are their mid-ribs. The seeds are infinitesimally small and innumerable, as noticed in the *Epipactis*, 7.11.27. These too are elongated. The bog asphodel fruits have axile placentas.

August 20th. We walked in the little stretch of pine wood about noon, and there a bird flitted rather stealthily through the trees. The wings were rather a bright brown, mottled, each having a light bar across the tip, and the whole wing flat like a blade. It was the right size for a nightjar, so we stalked it to

see if it was resting along a bough instead of across it. Sure enough, it was, and I watched it flit away, alight again, and fly off again. The attitude on the bough with head well sunk between the shoulders was quite clear, and the long wings like a swallow's. Probably the dog had disturbed it on the ground. I lost sight of it in a very bushy pine.

September 1st. Just after the sun had set, I saw the humming bird hawk-moth feeding on red spur valerian. The proboscis was so long that less than half of it seemed concealed by the flower. The antennae were long and conspicuous, and the wings moved so fast that I could only see the orange colour of the hind-wings. So I should suppose the fore-wings moved faster. The end of the abdomen was black and white. It was a little moth for a hawk-moth. Later, resting on a wall, it was quite inconspicuous.

September 2nd. We saw the humming-bird hawk-moth in full sunshine at 1-30. Knowing the wing colours, it was easier to detect them through the quivering, against the white valerian.

September 6th. The same hollow where we lunched on July 5th now holds stunted plants of field gentian with lovely violet stars with fringed throats. There are berries on the bittersweet. Some ragwort has sprouted again.

October 10th. Three of the leaves shed by the spindle tree have been cut by a leaf-cutting bee. A humming bird hawk-moth came indoors at tea-time during a smart shower. It appeared in the frame of the window, where the crimson Virginia creeper is rapidly thinning, and hovered awhile. Then it was attracted by the electric light fittings and is now resting against the porcelain on the ceiling.

October 22nd. The autumn coloured trees were suffused with rosy light before breakfast for quite a long time, and any bird, pigeon or gull, that rose into the light became quite red. We walked into a pine plantation beyond Bushey, where the commonest fungus was a yellowish-brown *Boletus* with a yellow stem and smooth cap only viscid when wet. There were different sizes of it. There was a different species with a large ring and a purplish cap covered with mucus. (1) *Tricholoma rutilans*, as might be expected, grew on felled stumps in great beauty, though several were deformed. There were large numbers of yellow fungi on and around stumps which no doubt were (2) *Flammula*

hybrida. I picked up a cap of large diameter from a cluster as yellow as sulphur tuft, and it seemed to be a *Clitocybe* with a dark stem. There were patches of the (3) scarlet flycap and there had been many earlier. A red *Lactarius* was likely to be *L. rufus* as it was acrid (when tasted). There was a group of three or four sunset-coloured *Lactarii* with concentric rust-coloured rings on the cap. It shed a brilliant orange juice when a section was cut (It was painted and named later: *L. deliciosus*). (4) *Collybia radicata* grew near this with a very much-frilled edge to the cap. On the margin of the cart track we several times saw (the fringed clustered brackets of) *Thelephora laciniata*. (5) *Laccaria laccata* was really red in that wood. (1, 2, 3, 4, and 5 had been painted in previous years.)

The vagueness of the last note on toadstools is due to the absence of books which I should have consulted for the names of species new to me. But, even without books, paintings which we make ourselves teach us most of what we can learn about a fungus. We can name them later when a book is available, if we have also shown by a section how the gills join the stem, taken a print of the colour of the spores, made a note of the ground or wood or other substance on which the fungus grew, whether it was solitary or clustered, whether it was dry or sticky, scented or foetid.

My faith in the Nature Note-book, for accumulating interesting facts from which eventually conclusions can be justly drawn was confirmed when I began the study of fungi. I made out a list on squared paper of all that had been noted in Ambleside, leaving columns for dates of nine years in succession. And I painted as many as I could, especially the more uncommon kinds. Gradually it became evident that many species came up in the same spots year after year, particularly in the grounds of Scale How. Some came for several years in succession and then disappeared altogether. One came on the site of a bonfire and was not seen again for several years, when it sprang up on quite another patch where there had been a bonfire, and was correctly named: *Flammula spumosa*.

Beginners would learn in the same way from their flower lists, which were rare and which were common. On the first day of the month you can compile a list of all the plants, trees and grasses in flower and jot them down in the list. A list of dates

when butterflies and moths are first seen flying would show that those which pass the winter in the pupal stage emerge about the same date every year—the brimstone butterfly and the orange tip, for example, Those that fly on the first sunny day in March, like the small tortoiseshell, have been hibernating.

Insects are not easy to paint because you must get the two sides alike. But no child should ever be deterred from trying to paint what he wishes to do because his elders find it difficult. There are children who can paint excellent likenesses of flowers before they can write. And then the notes should be written at their dictation.

It does not matter how short they are. For example:

'March 13th. Saw a hive bee at the purple crocus while I was weeding.

'March 14th, The distance between the two planets has increased visibly.

'March 15th. Along the Tyneham road the pussy willow is golden in places, and green behind the castle.

'March 16th. I saw the back of a tortoiseshell butterfly down the Wych road yesterday and one full-face in the school to-day. The chiffchaff was singing in the garden this morning, the third consecutive fair and sunshiny day. On the common a patch of lesser hairy cress was all out, flowers looking like ivory against brown stems and rosettes.

'March 17th. Green Woodpeckers sitting on a fence near Dunshay.

'March 18th. Many wood violets are out in the grass on West-hill, besides quantities of whitlow grass and the lesser hairy cress. Chiffchaff again. Ivy-leaved speedwell is bluer in Olives lane than in the garden and has ripe fruits.'

It just happened that those six days offered something to note every day, but it is not necessary to write something daily. It would however, be a thousand pities if a child did not *see* something notable every day in a month like March.

The note on March 14th alludes to Jupiter and Saturn, which have been conspicuous all through the winter in the constellations of Pisces and Aries. It was a good time of year for learning to know by sight the first few signs of the Zodiac, the Ram, the Bull, the Twins and the Lion, one or other of which made the background of Jupiter and Saturn.

'August 25th. Last night I saw the moon rising after and below the two planets. This morning I saw Venus at 4 a.m. in the same place, two hours before sunrise in Gemini.

'September 21st. At 10 p.m., the moon had risen some time after Jupiter and Saturn. It was cloudy last night when we should have seen them close together. To-night is very clear, and I saw Fomalhaut down West Street for the first time. Arcturus had not set.

'October 13th. This morning about 6-20 S.T. all three planets were to be seen: Jupiter and Saturn in a cloudy western sky and Venus rising in the East. About half an hour later Venus had climbed to the top of the church tower.

'October 17th. Late at night the moon, one day past the full, was so close to Jupiter as to obscure Saturn with its light.

'November 1st. I awoke about 6-0 and saw Venus among the stars. The handle of the Dipper and Arcturus just risen were to the left of her and Leo above, so she must be in Virgo.

'November 4th. Again after heavy rain the stars are beautiful with a crescent moon five days old. She is in Sagittarius. I saw Arcturus not having set, Fomalhaut rising and Jupiter and Saturn below Aries. Jupiter was in opposition on the 3rd (see Whitaker's Almanac.)

'November 22nd. Coming home at twilight, I saw Jupiter and Saturn rising in a clear sky opposite the yellow sunset about 5-50 p.m. The stars were not visible till 6-30. I just caught a glimpse of Arcturus before he set in a dip in the hills.

'December 15th. It was quite dark this morning at 8-0 S.T. Venus was low down and very brilliant in Scorpio, I expect, and in the South were Arcturus and Spica, Leo westering and beginning to look pale.

'February 1st, 1941. The moon is in Pisces. Pegasus is setting at 9-30 p.m., and the two planets, closer to each other than when I saw them, can now be seen in the south-west.

'February 4th. The moon made a shallow isosceles triangle with the two planets, being below and beyond Saturn when I saw it at 11 p.m.

'February 20th. Jupiter and Saturn were very close together at 9 p.m. last night and seem to be in Taurus now. Aldebaran and the Pleiades were opposite to my west window.

March 3rd. The crescent moon was rather near the planets on their left to-night and the two planets are noticeably further apart. The western sky is lovely with Taurus, Orion, Sirius and Procyon.

March 30th. The young moon set in a clear sky just below Saturn, now a long distance from Jupiter. The Pleiades were above Jupiter and Orion to the left.'

These notes were merely written for pleasure at the time, but on comparing them certain astronomical facts become clear. (1) The three dates February 4th, March 3rd and March 30th, each twenty-seven days apart, give the return of the moon to the part of the sky where Jupiter and Saturn remain comparatively immobile because they are so far away from the earth. (2) The record on November 22nd of Jupiter rising at sunset is significant because he was in opposition at the beginning of the month, that is to say, he was on the opposite side of the earth from the sun and rose at sunset like a full moon. When planets and moon are among the brighter stars, it is interesting to make a map of their positions every clear night and so to demonstrate the movements of the planets. Venus as a morning star rises as daylight grows stronger and is visible long after the stars have faded. But when she is an evening star she can be seen to move rapidly with respect to the stars. For example, when she is below the great square of Pegasus, as she frequently is in February, it is easy to judge her position by angles from any two stars in the square and to plot it on a star map.

The movement of stars across the sky, due to the earth's rotation, can be observed in a single evening by sitting in one spot opposite the window; for within an hour it is easy to see that Orion or Sirius have changed their places with reference to the window bars. Observations at the same hour over a series of evenings will show too how the stars rise a little earlier every night on account of the earth's journey round the sun. This is why from your west window you can see Orion far to the left at bed-time in February, while in March he is right opposite as soon as it is dark. Instead of laboriously copying a star map, it is well to choose one part of the sky and show how one constellation leads the eye to another, as the Great Bear points to the Pole star, Procyon and Sirius make a big triangle with Betel-

geuse in Orion, or the line from Vega to Arcturus passes through Hercules and Corona borealis. If watching in the dark, positions can be pricked on paper with a pin. Such a map can be entered in the Nature Note-Book as a record of stars already recognised.

When eclipses are to be recorded, discs representing the sun or moon and the shadow creeping across it are preferable about the size of a sixpence. There can be a series of them, such as often appears in the newspapers next day when photographs have been taken, and the time which each of them represents should be carefully marked besides it.

Apart from astronomy, the rule should be to paint life-size, the size itself being a nature note. Once you exaggerate the size or diminish it, the record cannot be trusted. If the specimen has been magnified with a lens, the fact should be noted alongside: moss capsules, fruit sections, spiders' nests, small insects or their cast skins need magnifying because the detail is important. In general, the size of the painting is limited to the size of the book. Some garlies, or grasses, have very tall stalks, and they can be delineated with a break in the middle between the flower borne on its piece of stalk, and the bulb with a much thicker portion rising from it—or a part of the grass stem that shows the base of the leaf and the ligule. Paintings like huge toadstools that need a lot of water might be better done on a sketching block. But it is best for you to find out these things for yourself, bearing in mind that it is the study we devote to truthful details which matters, because it brings us new knowledge. Time spent on beautifying titles which are followed by blanks should have been used in painting from nature. So embellishments like a coloured title page or heading for every month should be indulged in only by those who have plenty of notes under the headings! Yet children should keep their Nature Note-books with as little criticism as possible, and that offered positively as praise for what is well done. Children given constant opportunity to enjoy the beauties of nature show how exceedingly observant they are, their perception far outstripping our own.

Quotations from the poets are the aptest expression of our own feelings about Nature. Verses chosen spontaneously from the daily reading and recitation of poetry can be entered, not as a substitute for the individual notes, but as a beautiful addition to them.

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People who have been privileged to live in the Lake District are naturally fond of the lines of Wordsworth which follow:

'....Knowing that Nature never did betray
The heart that loved her; 'tis her privilege
Through all the years of this our life, to lead
From joy to joy: for she can so inform
The mind that is within us, so impress
With quietness and beauty, and so feed
With lofty thoughts, that neither evil tongues,
Rash judgments, nor the sneers of selfish men,
Nor greetings where no kindness is, nor all
The dreary intercourse of daily life,
Shall e'er prevail against us, or disturb
Our cheerful faith that all which we behold
Is full of blessings.'..

Lines composed above Tintern Abbey